1886MNRAS..46..404N

a, *b*, *c*. The fact of this disturbance on the eighth plate is not only confirmed, but is actually localised by the measures of the star *d*, from 61^1 and 61^2, for this measure is in good accordance with the similar measures on all the other seven plates.

The film has therefore been disturbed in the neighbourhood of *a*, *b*, *c*, and remained unimpaired in other parts. From these results I think we may fairly deduce the reliability of the whole process, both in regard to the ultimate precision, and the power of detecting flaws in the photographic film. It may be well to state that the delicacy of the measures does not extend beyond the hundred-thousandth of an inch on the film, amounting to about 0″·07. The plates are purposely confined to two inches square, embracing the limit of accuracy of the telescopic field, whilst beyond these dimensions the photographs might resemble pictures rather than accurate charts, capable of exact measurement.

Oxford University Observatory,
1886, *June* 10.

On the Orbit of ζ Sagittarii. By J. E. Gore.

This bright southern star was discovered to be double many years ago by Winlock with the 15-inch Refractor of the Harvard Observatory. Very few measures of it have been made, but those by Burnham in 1878–1881 show that it is undoubtedly a binary in very rapid motion.

I have computed the orbit by the graphical method described in the "Handbook of Double Stars" by Messrs. Crossley, Gledhill, and Wilson.

The observations used are as follows:—

Epoch.	Position Angle.	Distance.	Observer.
1867·8	260°·8	0″·48	Newcomb
1878·70	84·2	0·42	Burnham
1880·62	62·1	0·55	”
1881·61	36·1	0·31	”

From these I have computed the following provisional elements:

Elements of ζ Sagittarii.

P = 18·69 years	Ω = 83° 22′
T = 1882·86	λ = 263° 21′
e = 0·1698	a = 0″·53
γ = 58° 48′	μ = −19°·26

The observations are, of course, much too few to enable a satisfactory orbit being computed, but I think the observed measures

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show that the period found above cannot be very far from the truth. With the exception of δ *Equulei*, it seems to be the shortest period yet computed for a binary star.

The following is a comparison between the recorded observations and the positions computed from the above elements :—

Epoch.	θ_o	θ_c	$\theta_o-\theta_c$	ρ_o	ρ_c	$\rho_o-\rho_c$
	°	°	°	″	″	″
1867·8	260·8	260·2	+0·6	0·48	0·51	−0·03
1878·70	84·2	85·0	−0·8	0·42	0·53	−0·11
1880·62	62·1	61·4	+0·7	0·55	0·40	+0·15
1881·61	36·1	38·2	−2·1	0·31	0·29	+0·02

Owing to the closeness of the components, and the great southern declination of the star, it cannot be well measured in this country. It is therefore to be hoped that observers in the Southern Hemisphere will pay some attention to this interesting binary during the autumn of 1886 and 1887. If the above elements are correct, the position-angle and distance must at present be nearly the same as when the star was measured in 1867, a complete revolution having been performed in the interval, and no more favourable opportunity of measuring it will occur till the year 1896.

The position of the star is for 1886·0

$$\text{R.A.}\ 18^{\text{h}}\ 55^{\text{m}}\ 21^{\text{s}}$$
$$\text{S.}\ 30^\circ\ 3'\ 20''$$

The formulæ for calculating an ephemeris are

$$u - 9{\cdot}728 \sin u = -19^\circ{\cdot}26\ (t - 1882{\cdot}86)$$
$$\tan \tfrac{1}{2}V = 1{\cdot}19 \tan \tfrac{1}{2}u$$
$$\tan(\theta_c - 83^\circ\ 22') = 0{\cdot}5180 \tan(V + 263^\circ\ 21')$$
$$\rho = 0''{\cdot}53\ (1 - 0{\cdot}1698 \cos u) . \frac{\cos(V + 263^\circ\ 21')}{\cos(\theta_c - 83^\circ\ 22')}$$

where u is the eccentric anomaly, and V the true anomaly for the time t, θ_c the required position-angle, and ρ the distance.

The magnitudes of the components are about 3·5 and 4·0.

1886, *May* 25.

The Northern Hemisphere of Mars. By N. E. Green.

It has been considered advisable to re-examine the details of the northern hemisphere, in order to correct or improve the map of *Mars* published in connection with the Madeira Series in 1877, that portion of the map being formed from drawings made in 1873, and considered provisional.

A careful study of the northern markings was made by Mr. Knobel in 1884, and during the recent opposition the writer has

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